FUZZY DEMATEL METHOD TO EVALUATE THE DIMENSIONS OF MARKETING RESOURCES: AN APPLICATION IN SMEs

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Abstract. Identifying the cause and effect factors of marketing resources and prioritizing them with respect to their level of importance can build superior market performance for companies. Although there have been some studies in the literature which have used marketing resource dimensions to conduct their research, these studies have not considered the relationships between marketing resource dimensions. Therefore, the aim of this study is to identify the cause and effect factors of marketing resources and to prioritize them in terms of their importance using the fuzzy Decision-Making Trial and Evaluation Laboratory method. The findings of this study suggest that the dimension *managerial capabilities*, composed of *financial management*, *effective human resource management* and *good operations management expertise*, exerts a greater influence on marketing strategy than other criteria. In addition, the criterion *credibility with customers through being well established in the market* is the most important aspect of marketing resources.

Keywords: marketing resources, fuzzy logic, empirical research, SMEs, relationship between factors, importance of factors.

JEL Classification: M31, D81.

Introduction

Marketing resources can be considered among the most important resources for the success of organizations in today's competitive environment. Examining marketing resources provides significant clues for decision makers in determining organizations' marketing strategies. Knowledge of current marketing resources is also important to decision makers as it leads to more strategic behaviour against competitors. Hence, this paper identifies aspects of cause and effect related to marketing resources and prioritizes them with respect to their level of importance.

A firm must have an established competitive core, including resources, competences and relationships with others in the international area (Hollensen 2010). Understanding the level of importance of marketing resources and the relationships among them helps enterprises to sustain this competitive core. In addition, attaining an understanding of the relationships between marketing resources potentially makes it possible to choose the

most appropriate marketing strategy. Today, the choice of the most pertinent marketing strategy is of considerable importance for enterprises to establish difference and attain superiority in a competitive environment. Lin, Wu (2008), Wu *et al.* (2010a, 2010b), and Lin *et al.* (2010) have researched the selection of the most suitable marketing strategy based on marketing resources, namely, managerial capabilities, customer-linking capabilities, market innovation capabilities, human resource assets and reputational assets. As in all firms, determining the weight of marketing resources, finding relationships between them and identifying their causes and effects is also of significance to small- and medium-sized enterprises (SMEs) in gaining sustained competitive advantage. However, the interdependent relationships between the various factors have not yet fully been studied.

This paper examines the interactive relationships between different marketing resource factors using the fuzzy Decision-Making Trial and Evaluation Laboratory (fuzzy DEMATEL) method, applying a fuzzy logic-based questionnaire. Adrian (1998) emphasizes the usefulness of the fuzzy logic questionnaire in an interview format. This study aims to develop a causal diagram which shows aspects of cause and effect in the application of marketing resources and to prioritize these factors, indicating their level of importance as criteria for SMEs. It is not possible to be a leading company without an appropriate evaluation of marketing resources. For decision makers, this paper presents a successful application of the fuzzy DEMATEL method for the evaluation of marketing resources. The fuzzy DEMATEL method enables the evaluation of relationships between marketing resource dimensions and also prioritizes them, facilitating practical decision making regarding marketing strategy to accomplish the ultimate goal in manufacturing of attaining sustainable competitive advantage.

The paper is organized as follows: first, a literature review addressing marketing resources is presented in the next section. Then, the methodology of fuzzy DEMATEL is described. The analysis and results are presented following the description of the fuzzy DEMATEL method. Subsequently, limitations and future research directions set out. The final section draws conclusions.

1. Literature review

SMEs have very important functions in today's global economy. They also make contributions to regional economies in terms of providing occupations, innovation and competition (Ulubasoglu, Akdis 2009). However, whilst playing an important role in regional development, SMEs have many fundamental problems. These include limited financial sources, lack of expert personnel, lack of good market information or information sources, lack of qualifications in sales marketing, the management of human resources, general management, and production/operations (Gilmore *et al.* 2001, 2006; Simpson, Taylor 2002). Business resources include those which are human, owned and used by the company to carry out activities, physical factors, financial organs and intangible incomes or factors (Sanzo *et al.* 2011). SMEs have limited capital and resources to sustain their manufacturing and marketing activities (Spillan, Parnell 2006; Kee *et al.* 2008).

The continual change in target markets and globalization make obtaining this capital and these resources and managing them of considerable importance for the survival of SMEs (Kim *et al.* 2008). Therefore, firms should attempt gain a more competitive market position than their competitors by leveraging marketing resources (Lin, Wu 2008).

Studies related to marketing resources and marketing strategy are increasing day by day in the literature. McDaniel and Kolari (1987) researched the usefulness of the Miles and Snow strategic typology in the field of marketing strategy in the banking sector. Studies have generally focused on the company or firm performance with respect to marketing. These studies are summarized in Table 9 in the Appendix. Table 1 presents the literature related to marketing strategy selection. As can be seen from Table 1, all tool(s)/method(s) are related to multi-criteria decision making:

Table 1. Marketing strategy selection

Author(s) (pub. year)	Tool(s)/method(s)
Lin and Wu (2008)	AHP
Lin *et al.* (2009)	Fuzzy ANP
Lin *et al.* (2010)	Fuzzy AHP
Wu *et al.* (2010a)	ANP
Wu *et al.* (2010b)	ANP and TOPSIS
Mohaghar *et al.* (2012)	VICOR and Fuzzy AHP
Elham *et al.* (2015)	VICOR and Fuzzy AHP

Recently, studies related to marketing strategy have also been reported in the literature. Rundh (2013) examined how packaging influences marketing strategy in the context of the supply chain. Leonidou *et al.* (2013) researched marketing strategy in the hotel sector. Schmidt *et al.* (2014) introduced "pay what you want" (PWYW) as attractive marketing strategy and concluded that this approach can be viable in a monopolistic market. Details on marketing strategy can be found in Zinkhan and Pereira (1994).

This study is conducted in light of the study by Hooley *et al.* (2005). The aim of their study was to research the impact of marketing resources on the creation of competitive advantage and firm performance. To achieve that aim, they proposed a conceptual framework for categorizing marketing resources and explaining their impact on firm performance. The marketing resources defined by Hooley *et al.* (2005) are managerial capabilities, customer-linking capabilities, market innovation capabilities, human resource assets and reputational assets. We obtained the dimensions of marketing resources from this study.

In addition to Marketing Resources and Marketing Strategy literature, fuzzy DEMATEL has also been successfully applied in many fields, such as hotel service quality perceptions (Tseng 2009), evaluating technology commercialization (Altuntas, Dereli 2012), and identifying the relationships among machines for facility layout problem (Altuntas *et al.* 2014).

2. Fuzzy DEMATEL method

This section is divided into two subsections in order to explain the Fuzzy DEMATEL method. The first and second subsections introduce DEMATEL and Fuzzy DEMATEL method, respectively.

2.1. DEMATEL method

The basic steps of DEMATEL method are summarized as follows based on Liou *et al.* (2007) for the first three steps and Yang *et al.* (2009) for the last step:

– Step 1: Compute average initial direct-relation matrix (Matrix A). Generally, a survey study is conducted by asking experts who are expert about the topic under consideration. The survey includes comparison scale to find influence and direction among criteria with respect to expert opinions. Comparison scale includes four levels, namely: (0) no influence, (1) lower influence, (2) medium influence, and (3) higher influence. The basic notation to compute matrix A is given as follows:

x_{ij} = influence degree of factor i to factor j,

H = total responds (experts),

n = number of factors,

x_{ij}^k = influence degree of factor i to factor j with respect to k^{th} respond,

x^k = nxn non- negative matrix for k^{th} respond.

Initial direct-relation matrix (Matrix A) = $[a_{ij}]$ can be computed as follows:

$$a_{ij} = (1 / H) \, x \sum_{k=1}^{H} x_{ij}^k. \tag{2}$$

– Step 2: Compute normalized initial direct-relation matrix (Matrix D). The formulation to compute matrix D is as follows:

$$S = \max \, (\max_{1<i<n} \sum_{j=1}^{n} a_{ij}, \max_{1<j<n} \sum_{i=1}^{n} a_{ij}), \tag{2}$$

$$D = A/S. \tag{3}$$

– Step 3: Compute factor total-influence matrix (Matrix T). The formulation to compute matrix D is given as follows:

$$I = \text{identity matrix}$$

$$T = D(I - D) - 1. \tag{4}$$

– Step 4: Set a threshold value to filter out minor effects and Compute C, R, C + R, and R – C values to obtain diagram of showing causal relations among criteria. If values are less than threshold value, the values in matrix T are reset to zero. The basic notations to conduct this step are given as follows:

C = sum of column of the matrix T,

R = sum of row of the matrix T,

ri + cj= the importance of factor *i,*

ri – cj = the net effect of factor *i.*

2.2. Fuzzy DEMATEL method

Steps of Fuzzy DEMATEL method are given in the following:

– Step 1: Compute average initial direct- relation matrix (Matrix A). In this study, we apply the triangular fuzzy number and use the linguistic scale and its corresponding fuzzy numbers which are defined by Chen (2000). Tseng (2009) also used Chen's (2000) study for the linguistic scale and its corresponding fuzzy numbers. Table 2 shows used fuzzy numbers dealing with each expert response. Expert's assessment of facility pair with respect to each considered factors should be converted fuzzy numbers into crisp scores. This process named defuzzification. In this study, "Converting the Fuzzy data into Crips Scores" (CFCS) method (developed by Opricovic, Tzeng 2003) is employed for the defuzzification process.

Table 2. Linguistic variable and corresponding triangular fuzzy numbers

Linguistic variable	Corresponding triangular fuzzy numbers
No Influence (NI)	(0, 0.1, 0.3)
Very Low Influence (VLI)	(0.1, 0.3, 0.5)
Low Influence (LI)	(0.3, 0.5, 0.7)
High Influence (HI)	(0.5, 0.7, 0.9)
Very High Influence (VHI)	(0.7, 0.9, 1)

CFCS method includes following four steps. These steps are given as follows based on Tseng (2009).

Let $w_{ij}^k = (a_{1ij}^k, a_{2ij}^k, a_{3ij}^k)$, there are k experts, w_{ij}^k presents the fuzzy weight of ith criteria which affects the jth criteria evaluated by k^{th} expert.

– Normalization:

$$\left. \begin{aligned} \Delta_{\min}^{\max} &= \max a_{3ij}^k - a_{1ij}^k \\ xa_{1ij}^k &= (a_{1ij}^k - \min a_{1ij}^k) / \Delta_{\min}^{\max} \\ xa_{2ij}^k &= (a_{2ij}^k - \min a_{1ij}^k) / \Delta_{\min}^{\max} \\ xa_{3ij}^k &= (a_{3ij}^k - \min a_{1ij}^k) / \Delta_{\min}^{\max} \end{aligned} \right\}. \tag{5}$$

– Compute left(ls) and right(rs) normalized values:

$$\left. \begin{aligned} xls_{ij}^k &= (xa_{2ij}^k / (1 + xa_{2ij}^k - xa_{1ij}^k) \\ xrs_{ij}^k &= (xa_{3ij}^k / (1 + xa_{3ij}^k - xa_{2ij}^k) \end{aligned} \right\}. \tag{6}$$

– Compute total normalized crisp value:

$$x_{ij}^k = [xls_{ij}^k (1 - xls_{ij}^k) + xrs_{ij}^k xls_{ij}^k] / [1 - xls_{ij}^k + xrs_{ij}^k], \tag{7}$$

– Compute crisp values:

$$w_{ij}^k = \min a_{1ij}^k + x_{ij}^k \Delta_{\min}^{\max}. \tag{8}$$

Equation (1) is used to compute average initial direct- relation matrix (Matrix A) after each fuzzy responds converted into crisp scores.

– Step 2: Compute the normalized initial direct-relation matrix (Matrix D) by using equation (2) and (3).

– Step 3: Compute factor total-influence matrix (Matrix T) by using equation (4).

– Step 4: This step is exactly the same as step 4 of DEMATEL method.

3. Analysis and results

In this section, an empirical study shows models of the cause and effect relationships of marketing resources. Throughout the literature, we considered the dimensions and criteria for marketing resources in light of the study by Hooley *et al.* (2005). This is because, Lin, Wu (2008) by using AHP, Wu *et al.* (2010a) by using ANP, Lin *et al.* (2010) by using Fuzzy AHP and Wu *et al.* (2010b) by using ANP and TOPSIS conducted their research based on marketing resources in light of the study by Hooley *et al.* (2005). Additionally, Mohaghar *et al.* (2012) by using VICOR and Fuzzy AHP also conducted their study based on marketing resources in light of the study by Hooley *et al.* (2005), that they except added the "capabilities in product distribution" criteria. Thus, the dimensions considered in this study have been used extensively in the marketing literature recently. However, these studies did not consider the relationships between the dimensions found using a scientific method. No previous work has applied either the Fuzzy DEMATEL method or other scientific methods to find relationships among marketing resources dimensions. Therefore, to fill this gap, the aim of this study is to use the fuzzy decision-making trial and evaluation laboratory (DEMATEL) method to find relationships among dimensions and to prioritize them.

There are five dimensions and thirteen criteria for marketing resources as considered by Hooley *et al.* (2005). The use of these dimensions and criteria has been accepted and applied by the aforementioned researchers due to their practical application in real life. The dimensions are *managerial capabilities (A), customer-linking capabilities (B), market innovation capabilities (C), human resource assets (D) and reputational assets (E). The criteria include strong financial management (A1), effective human resource management (A2) and good operations management expertise (A3) for managerial capabilities (A), superior levels of customer service and support (B1), relationships with key target customers (B2), good at understanding what customer needs and requirements are (B3), good at creating relationships with customers (B4), good at maintaining and enhancing relationships with customers (B5) for customer-linking capabilities (B), ability to launch successful new products and services (C1) and effective new products/*

services (C2) for market innovation capabilities (C), levels of employee job satisfaction compared to competitors (D1) and levels of employee retention compared to competitors (D2) for human resource assets (D) and company or brand name and reputation (E1) and credibility with customers through being well established in the market (E2) for reputation assets (E). Details of these criteria can be found in Hooley *et al.* (2005), Lin, Wu (2008), Wu *et al.* (2010a, 2010b), Lin *et al.* (2010), and Mohaghar *et al.* (2012).

The research was carried out in Trabzon, Turkey, in 2012, as this location has several advantages. Being on the historical Silk Road, Trabzon has been a trade route to Iran in the East and to Russia and in the North for centuries. It is the most important city in the Eastern Black Sea Region by virtue of being Turkey's fourth biggest Turkish port, having an international airport and a free zone (RTSIT 2012). In the city, 120 companies in total, notably from the Russian Federation, France, Germany, Italy, Canada, Poland, Belgium, Georgia, Sweden, Holland and the United Kingdom, export to 89 countries (TCBSTB 2012). Also, the Trabzon World Trade Center, the second institution of Turkey, situated in the city, aims to accelerate international trade in Trabzon and Eurasia more widely, as well as to create a trade platform from which firms can gain access to world markets (TTSO 2011). There will be four organized industrial zones in Trabzon. However, three of these (Besikduzu, Vakfikebir, Akcaabat) are not yet operational. For this reason, only the Arsin Organized Industrial Zone is included in the research sample. Production in this zone includes 19 different sectors, primarily food, machinery, forestry products and the glass industry, employing 3,500 people. Trabzon Arsin Organized Industrial Zone makes a sizable contribution to the national economy, amounting to 224 million dollars in exports and 16 million dollars in imports. There are 74 firms operating in the Arsin Organized Industrial Zone (TTSO 2011; TOSBOL 2011).

A questionnaire was developed based on fuzzy DEMATEL. Data for this study were gathered from face-to-face interviews conducted with 52 company managers. Profiles of the managers interviewed are given in Table 5 in the Appendix.

Company characteristics are given in Table 6 in the Appendix. In this study, 80.8% of respondents worked in companies with 10–49 employees and 19.1% worked in companies with 50–249 employees.

Studies in the literature which have used the DEMATEL method have not applied their questionnaires to large samples, whereas survey studies tend to be applied with a sufficient sample to enable accurate interpretations of the system of interest. For example, Shieh *et al.* (2010) applied their DEMATEL questionnaire to 19 managerial personnel to evaluate factors related to the quality of hospital service. Wu *et al.* (2010c) applied their DEMATEL questionnaire to 13 experts to construct causal relationships among criteria for outreach personnel in an employment service outreach programme. In this study, the 52 completed questionnaires obtained from 52 different companies are deemed sufficient.

The computational results using the fuzzy DEMATEL method are given in Tables 7 and 8 in the Appendix. Table 7 shows the average initial direct relation matrix A based on equation (1). Table 8 shows the normalized initial direct relation matrix D based on equation (3). The factor total influence matrix T depicted in Table 3, showing the direct and indirect influences for each factor, is based on equation (4).

Table 3. The factor total-influence matrix T

	Al	A2	A3	B1	B2	B3	B4	B5	C1	C2	D1	D2	E1	E2
Al	1.064	1.103	1.155	1.194	1.181	1.174	1.199	1.189	1.191	1.188	1.069	1.023	1.203	1.229
A2	1.130	1.033	1.156	1.198	1.185	1.179	1.203	1.196	1.186	1.185	1.070	1.024	1.193	1.223
A3	1.132	1.102	1.084	1.200	1.184	1.184	1.207	1.198	1.189	1.189	1.063	1.020	1.199	1.226
BĮ	1.139	1.105	1.159	1.132	1.197	1.194	1.217	1.208	1.196	1.193	1.062	1.023	1.205	1.237
B2	1.102	1.071	1.124	1.168	1.083	1.153	1.175	1.167	1.158	1.157	1.025	0.981	1.167	1.196
B3	1.117	1.088	1.144	1.183	1.175	1.099	1.200	1.190	1.180	1.178	1.039	0.998	1.181	1.217
B4	1.108	1.075	1.128	1.172	1.160	1.160	1.108	1.179	1.165	1.160	1.030	0.985	1.165	1.203
B5	1.103	1.067	1.123	1.166	1.155	1.153	1.176	1.096	1.162	1.158	1.025	0.983	1.166	1.200
C1	1.106	1.066	1.117	1.161	1.150	1.149	1.173	1.167	1.087	1.159	1.023	0.983	1.168	1.198
C2	1.082	1.042	1.096	1.135	1.124	1.128	1.145	1.138	1.138	1.064	1.012	0.966	1.143	1.173
D1	1.027	1.000	1.040	1.082	1.067	1.064	1.087	1.084	1.077	1.078	0.906	0.946	1.097	1.120
D2	0.961	0.936	0.976	1.011	0.998	0.996	1.014	1.012	1.010	1.013	0.920	0.815	1.029	1.048
EI	1.113	1.076	1.133	1.173	1.159	1.156	1.183	1.172	1.165	1.166	1.049	1.007	1.107	1.210
E2	1.142	1.107	1.162	1.210	1.194	1.192	1.218	1.209	1.199	1.199	1.074	1.033	1.212	1.167

According to Table 4, the importance of the criteria can be prioritized as E2 > B1 > E1 > B4 > B3 > B5 > C1 > A3 > B2 > A1 > C2 > A2 > D1 > D2 based on (R + C) values. The "credibility with customers through being well established in the market" criterion (E2), with the largest (R + C), is the most important factor for marketing strategy selection. Finally, the threshold value is determined to draw in Figure 1, which depicts the diagram showing causal relations among eight criteria.

There are two ways of setting a threshold value to filter out minor effects in the computation process accepted in the literature. In the first, the average of the elements in matrix T (Table 3) is used to set a threshold value. In the second, expert opinion is used to set a threshold value. Experts in the relevant area cannot easily be found. Therefore, computing the average of the elements in matrix T is generally accepted as the means of setting a threshold value to filter out minor effects. If the values are less than the threshold value, the values in matrix T are reset to zero. The diagram showing causal relations among the criteria is drawn based on this threshold value. The average of the elements in matrix T (Table 3) is 1.121. Figure 1 was drawn by considering the values of influence above 1.121.

As shown in the causal diagram (Fig. 1), the evaluation criteria are visually divided into **the causal group** (net causes) including A1, A2, A3, D1, B1 and B3, whereas **the ef-**
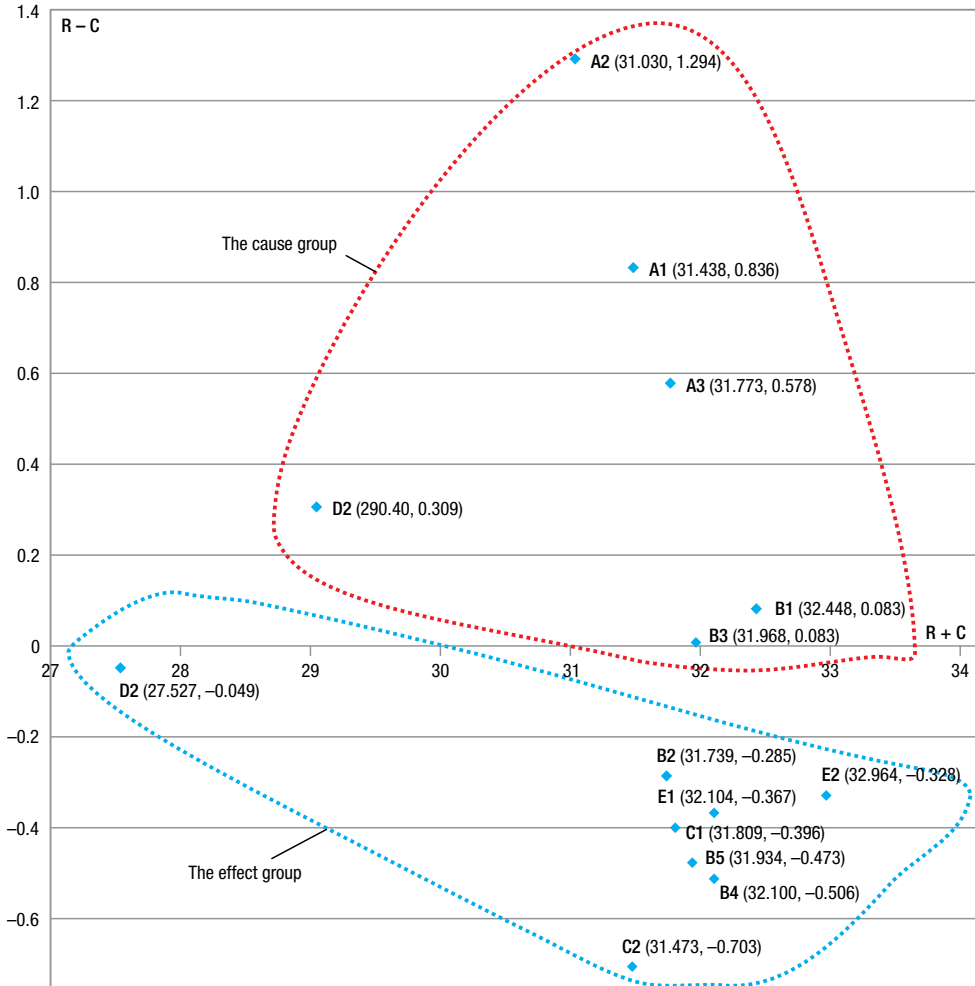
Fig. 1. The causal diagram

fects group (net receivers) is composed of criteria D2, B2, E2, E1, C1, B5, B4 and C2. The causal diagram provides valuable insights into which criteria are the most important with respect to marketing resources. For example, the dimension *managerial capabilities (A), which is composed of strong financial management (A1), effective human resource management (A2) and good operations management expertise (A3),* amounts to 68.5% of all of the positive values of (R – C). These three aspects have the greatest influence on the other criteria and should be the first concern for marketing managers in particular. In addition, the criterion with a negative value with respect to (R–C) is in the effects group. The results of this study can be used to choose appropriate marketing strategies for SMEs using an analysis of marketing resources.

Table 4 summarizes the sum of influences given to and received from the criteria:

Table 4. The sum of influences given and received among the criteria

Criteria	C(Sum)	R(Sum)	R + C	R – C
A1	15.324	16.160	31.483	0.836
A2	14.868	16.162	31.030	1.294
A3	15.597	16.176	31.773	0.578
B1	16.183	16.266	32.448	0.083
B2	16.012	15.727	31.739	-0.285
B3	15.980	15.988	31.968	0.008
B4	16.303	15.797	32.100	-0.506
B5	16.204	15.730	31.934	-0.473
C1	16.102	15.706	31.809	-0.396
C2	16.088	15.385	31.473	-0.703
D1	14.366	14.674	29.040	0.309
D2	13.788	13.739	27.527	-0.049
E1	16.235	15.869	32.104	-0.367
E2	16.646	16.318	32.964	-0.328

4. Limitations and directions for future research

This study has some limitations. In particular, our research sample only includes SMEs in Trabzon, Turkey and is therefore not representative of all such firms in Turkey or more widely. Studies including SMEs in other cities would provide more generalizable results. In addition, the issue of interdependence can be taken into account in future studies. Using multi-criteria decision-making methods such as ANP and fuzzy ANP in combination with the results of this research would aid in finding the most suitable marketing strategy. In addition, other types of membership functions can be treated in a fuzzy environment. Finally, in our research, SMEs operating in the sectors of food, furniture and wood, chemical products and machinery and equipment were included in the sample. Analysing the interrelated effects of marketing resources on a sectorial basis could be more beneficial for improving marketing strategies.

Conclusions

The fuzzy DEMATEL method is a useful tool not only to determine key success factors but also to evaluate the relationships between criteria. In this study, we conducted a case study to construct a causal diagram and identify the importance of the criteria which affect marketing strategy. The results of this study can hopefully help enterprises choose precisely which strategies are suitable by focusing on the crucial factors with respect to marketing resources. We identified the cause and effect factors of marketing resources through the causal diagram.

Our research results show that the dimension *managerial capabilities*, composed of *strong financial management*, *effective human resource management* and *good operations management expertise*, has the greatest influence on marketing resources among the dimensions in terms of marketing resources. This means that managerial capabilities exert the greatest influence on the other dimensions of marketing resources. Any change in managerial capabilities has an impact on the other dimensions. If a company's managerial capabilities are high, this also leads to high potential for the other dimensions in the company.

The other important findings from this study are that the criterion *credibility with customers through being well established in the market* is the most important factor determining the selection of marketing strategy. Hence, managers should build credibility with customers to establish and apply a more appropriate marketing strategy in today's competitive environment. The second most important factor is *superior levels of customer service and support.* Managers should therefore provide timely services and continued support, leading to superior levels of customer service and support, to derive high satisfaction and meet the customers' needs. The remaining criteria in order of priority were as follows: *company or brand name and reputation*, *being good at creating relationships with customers*, *being good at understanding what customer needs and requirements are*, *being good at maintaining and enhancing relationships with customers*, *ability to launch successful new products and services*, *good operations management expertise*, *relationships with key target customers*, *strong financial management*, *effective new products/services*, *effective human resource management*, *levels of employee job satisfaction compared to competitors* and *levels of employee retention compared to competitors*.

In addition, managerial capabilities and customer-linking capabilities also affect market innovation capabilities, which are composed of the ability to launch successful new products and services and effective new products/services. Therefore, our recommendations for SMEs' managers are that SMEs need to understand the their customers' wants and needs, provide a high level of customer service and support and also improve their relationship with customers to gain competitive advantage in this area. Managers who take account of these issues can also understand their firms' strengths and weaknesses and identify effective strategies against competitors.

The results obtained from this study can help business owners, marketing managers, production managers and senior executives to improve the quality of their decision making and accomplish the ultimate goal of manufacturing in terms of attaining sustainable competitive advantage. This study differs from the previous works in that it presents a successful application of the fuzzy DEMATEL method for the evaluation of marketing resources, determining the importance of the various criteria and classifying them into cause and effect groupings.

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APPENDIX

Table 5. Profiles of managers interviewed

Gender	Total Amount (%)	Education	Frequency (%)
Male	41 (78.8)	High school	9 (17.3)
Female	11 (21.2)	Vocational school	10 (19.2)
Age	Frequency (%)	University	31 (59.6)
20–25	2 (3.8)	Postgraduate	2 (3.8)
26–30	13 (25.0)	Interviewee's position	Frequency (%)
31–35	16 (30.8)	Business owner	15(28.9)
36–40	13 (25.0)	Marketing manager	13(25.0)
41–45	6 (11.5)	Production manager	6 (11.5)
46–50	2 (3.8)	Senior executive	18 (34.6)

Working time on the business (year)	Frequency (%)
1–4	15(28.8)
5–9	17 (32.7)
10–14	10(19.2)
15–19	7(13.5)
>20	3(5.8)

Table 6. Company characteristics

Number of employees	Frequency (%)
10–49	42 (80.8)
50–249	10 (19.2)
Running Time(Year)	Frequency (%)
1–4	5 (97)
5–9	10 (19.2)
10–14	15 (28.8)
15–19	12 (23.1)
20 – +	10 (19.2)
Industry	Frequency (%)
Food	10 (19.2)
Furniture and wood	7 (13.5)
Chemical products	5 (9.6)
Machinery & Equipment	16 (30.8)
Textile	5 (9.6)
Other	9 (17.3)

Table 7. The average initial direct-relation matrix A

	Al	A2	A3	B1	B2	B3	B4	B5	C1	C2	D1	D2	E1	E2
Al	0	0.725	0.739	0.721	0.718	0.656	0.692	0.649	0.757	0.732	0.732	0.670	0.779	0.757
A2	0.675	0	0.754	0.772	0.757	0.710	0.731	0.732	0.695	0.699	0.753	0.688	0.674	0.692
A3	0.682	0.707	0	0.775	0.732	0.754	0.757	0.736	0.721	0.729	0.660	0.635	0.732	0.710
B1	0.696	0.678	0.711	0	0.800	0.797	0.800	0.775	0.721	0.706	0.595	0.612	0.724	0.761
B2	0.675	0.678	0.721	0.768	0	0.754	0.750	0.739	0.718	0.718	0.551	0.504	0.725	0.729
B3	0.656	0.681	0.740	0.736	0.768	0	0.825	0.790	0.764	0.750	0.533	0.518	0.674	0.757
B4	0.696	0.670	0.711	0.754	0.750	0.775	0	0.822	0.736	0.700	0.558	0.500	0.649	0.750
B5	0.685	0.628	0.704	0.743	0.743	0.743	0.758	0	0.754	0.729	0.548	0.522	0.710	0.768
C1	0.736	0.635	0.656	0.703	0.711	0.725	0.743	0.761	0	0.761	0.544	0.533	0.747	0.768
C2	0.703	0.599	0.660	0.664	0.671	0.733	0.689	0.689	0.758	0	0.645	0.555	0.720	0.750
D1	0.620	0.645	0.580	0.627	0.591	0.581	0.602	0.638	0.631	0.657	0	0.786	0.753	0.724
D2	0.573	0.598	0.558	0.569	0.540	0.533	0.526	0.565	0.606	0.652	0.736	0	0.731	0.670
E1	0.703	0.631	0.721	0.714	0.689	0.682	0.736	0.686	0.693	0.710	0.714	0.691	0	0.782
E2	0.696	0.656	0.707	0.775	0.739	0.740	0.772	0.747	0.721	0.732	0.688	0.688	0.764	0

Table 8. The normalized initial direct-relation matrix D

	Al	A2	A3	B1	B2	B3	B4	B5	C1	C2	D1	D2	E1	E2
Al	0	0.075	0.077	0.075	0.075	0.068	0.072	0.067	0.079	0.076	0.076	0.07	0.081	0.079
A2	0.07	0	0.078	0.08	0.079	0.074	0.076	0.076	0.072	0.073	0.078	0.072	0.07	0.072
A3	0.071	0.073	0	0.081	0.076	0.078	0.079	0.076	0.075	0.076	0.069	0.066	0.076	0.074
B1	0.072	0.071	0.074	0	0.083	0.083	0.083	0.081	0.075	0.073	0.062	0.064	0.075	0.079
B2	0.07	0.071	0.075	0.08	0	0.078	0.078	0.077	0.075	0.075	0.057	0.052	0.075	0.076
B3	0.068	0.071	0.077	0.076	0.08	0	0.086	0.082	0.079	0.078	0.055	0.054	0.07	0.079
B4	0.072	0.07	0.074	0.078	0.078	0.081	0	0.085	0.077	0.073	0.058	0.052	0.067	0.078
B5	0.071	0.065	0.073	0.077	0.077	0.077	0.079	0	0.078	0.076	0.057	0.054	0.074	0.08
C1	0.076	0.066	0.068	0.073	0.074	0.075	0.077	0.079	0	0.079	0.057	0.055	0.078	0.08
C2	0.073	0.062	0.069	0.069	0.07	0.076	0.072	0.072	0.079	0	0.067	0.058	0.075	0.078
D1	0.064	0.067	0.06	0.065	0.061	0.06	0.063	0.066	0.066	0.068	0	0.082	0.078	0.075
D2	0.06	0.062	0.058	0.059	0.056	0.055	0.055	0.059	0.063	0.068	0.076	0	0.076	0.07
E1	0.073	0.066	0.075	0.074	0.072	0.071	0.076	0.071	0.072	0.074	0.074	0.072	0	0.081
E2	0.072	0.068	0.073	0.081	0.077	0.077	0.08	0.078	0.075	0.076	0.072	0.072	0.079	0

Table 9. Literatre review

Author(s) (pub. year)	Tool(s)/method(s)	Application area	Main goal(s) of the study	Results/Discussion
McDanie and Kolari (1987)	The Miles and Snow strategic (MSS) typology	1000 U.S. banks	To relate the usefulness of MSS typology to the field of marketing strategy	Marketing officers support MSS typology in U.S. banks.
Panayides (2004)	Empirical study, Anova	Logistics	To analyze the impact of marketing strategies on company performance	Service differentiation, market segmentation and inter-functional co-ordination affect company performance.
Luo et al. (2005)	Empirical study, Factor analysis	Companies in China	To examine the moderating role of globalization on the link between marketing resources and performance	Globalization activities strengthen the market orientation–performance link in the context of the emerging Chinese economy.
Vijande et al. (2005)	Empirical study, Confirmatory factorial analysis	Medium and large manufacturing firms in Spain	To research the effects of market orientation on business strategic behavior	There is usually the influence of market orientation on the different dimensions of the competitive strategy.
Spillan and Parnell (2005)	Empirical study, Factor and regression analysis	SMEs owners and managers in New York, and Pennsylvania	To examine the link between marketing resources and firm performance among SMEs	A customer orientation philosophy and a structure supporting coordination among departments and divisions are important for firm performance.
Ngo and O'Cass (2009)	Empirical study, Partial Least Squares	400 companies in Vietnam	To analyze the effect of marketing resources and capabilities on a firm's value offering	Creating synergy between operant resource based capabilities and value offering is vital in a firm's movement toward a new dominant logic for marketing.
Bulut et al. (2009)	Empirical study, Structural equations Modeling and factor analysis	312 firms in Turkey	To research the effect of dimensions of market orientation on firm innovative and financial performance	There is influence of dimensions of market orientation on firm innovative and financial performance.
Slater et al. (2010)	Empirical study, Factor and regression analysis	US manufacturing and service firms	To examine marketing strategy creativity and marketing strategy implementation effectiveness	The results are explained and discussed in detail in the study.
Othman et al. (2015)	Empirical study, Structural equations	156 companies in construction industry	To establish a link between marketing resources, procurement process coordination (PPC) and firm performance	Market orientation and entrepreneurial orientation positively influence innovation capability.
Kyriakopoulos et al. (2015)	Empirical study, Structural equations	980 Dutch B2B business units	To examine the role of market knowledge, reputation, and relational resources on radical innovation activity	There are links between market knowledge, reputational, and relational resources and radical innovation.

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